INFORMATION SCIENCES

An International Journal

Volumes 26, 27, 28, 1982

NORTH-HOLLAND

INFORMATION SCIENCES

Editor: King-Sun Fu

School of Electrical Engineering
Purdue University
Lafayette, IN 47907

Associate Editors

Mark Aizerman
Institute for Control Sciences
Academy of Sciences
of the U.S.S.R.
Profsejuanaja, 81
Moscow V-485, U.S.S.R.

Brian D. O. Anderson
Department of Electrical
Engineering
The University of Newcastle
New South Wales, 2308
Australia

A. M. Andrew
Viable Systems
Splatt Mill
Chillaton
Lifton
Devon PL16 OJB, England

Masanao Aoki
Institute of Social and
Economic Research
Yamada-Kami, Suita
Osaka 565, Japan

Karl-Johan Astrom
Division of Automatic Control
Lund Institute of Technology
P.O. Box 725
Lund 7, Sweden

Richard Bellman
University of
Southern California
Los Angeles, CA 90007

Frank B. Cannonito
Department of Mathematics
University of California
Irvine, CA 92664

Robert Fortet
University de Paris VI
Laboratoire de Calcul
des Probabilities
9, Quai Saint-Bernard
Tour 56, Paris 5, France

John Gerdes
Harvard-Smithsonian Center
for Astrophysics
60 Garden Street
Cambridge, MA 02138

Richard W. Hamming
Department of Computer Science
Naval Postgraduate School
Monterey, CA 93940

Arne Jensen
Institute of Mathematical
Statistics and
Operations Research
The Technical University
of Denmark
Lyngby, Denmark

Thomas Kailath
Department of Electrical
Engineering
Director, Information
Systems Laboratory
Stanford University
Stanford, CA 94305

Robert Kalaba
Department of Electrical
Engineering
University of Southern California
Los Angeles, CA 90007

Laveen Kanal
L.N.K. Corporation
302 Notley Court
Silver Spring, MD 20904

Asa Kasher
Department of Philosophy
Tel-Aviv University
Tel-Aviv 69978, Israel

Tosio Kitagawa
Faculty of Sciences
University of Kyushu
Fukuoka, Japan

Robert Lattes
Banque de Paris et des Pays-Bas
3 rue d'Antin
Paris 75002, France

Demetrios G. Lainiotis
Department of Electrical Engineering
State University of
New York at Buffalo
Amherst, NY 14620

Mihajlo D. Mesarovic
Systems Research Center
Case Western Reserve University
Cleveland, OH 44106

Azriel Rosenfeld
Computer Science Center
University of Maryland
College Park, MD 20740

Richard C. Singleton
SRI International
333 Ravenwood Avenue
Menlo Park, CA 94025

Harold Sorenson
Orincon Corporation
3366 North Torrey
Pines Ct.,
Suite 320
La Jolla, CA 92037

Michael S. Watanabe
Department of Physics
and Astronomy
University of Hawaii
Honolulu, HI 96822

Bernard Widrow
Stanford University
Stanford, CA 94305

L. E. Zachrisson
Institute for Optimization
and Systems Theory
The Royal Institute of Technology
Stockholm 70, Sweden

Lotfi Zadeh
University of California
Berkeley, CA 94720

INFORMATION SCIENCES

An International Journal

Volume 26

ROBERT F. ERLANDSON (Detroit, MI)
The Satisfaction Process: A Characterization Using Extended Topology . . . 1

RONALD R. YAGER (New Rochelle, NY)
Fuzzy Prediction Based on Regression Models 45

HIROSHI TANIGUCHI, KATSUSHI INOUE, AND ITSUO TAKANAMI (Ube, Japan)
A Note on Three-Dimensional Finite Automata 65

KATSUSHI INOUE, ITSUO TAKANAMI, AND HIROSHI TANIGUCHI (Ube, Japan)
A Note on Rebound Automata 87

CHYAN-GOEI CHUNG, KUÁNG-WEI HAN (Taiwan, Republic of China),
AND HSI-HAN YEH (Lexington, KY)
Digitalization of Continuous-Data Systems via
Time-Response Matching 95

JULIA ABRAHAMS (Houston, TX)
On the Selection of Measures of Distance between Probability
Distributions 109

WŁODZIMIERZ GREBLICKI AND MIROSŁAW PAWLAK (Wroclaw, Poland)
A Classification Procedure Using the Multiple Fourier Series 115

D. G. LAURENT (Carrollton, TX) AND S. SITHARAMA IYENGAR
Baton Rouge, LA)
A Heuristic Algorithm for Optimal Placement of Rectangular Objects . . . 127

JOE W. DURAN (San Antonio, TX) AND JOHN J. WIORKOWSKI (Richardson, TX)
Estimating the Correctness of Computer Programs 141

A. J. Jerri (Potsdam, NY)
A Note on Sampling Expansion for a Transform with Parabolic Cylinder Kernel 155

Shi Qing-Yun and K. S. Fu (West Lafayette, IN)
Efficient Error-Correcting Parsing for (Attributed and Stochastic) Tree Grammars 159

Pradip K. Srimani (St. Augustin, West Germany), Nanda De, Abhijit Sengupta, and Subir Bandyopadhyay (Calcutta, India)
A New Approach to Single-Fault-Tolerant Realization of Synchronous Sequential Machines 189

P. N. Arora (New Delhi, India) and S. Chowdhary (Delhi, India)
On a Characterization of α-Entropy 199

G. Rozenberg (Leiden, The Netherlands) and R. Verraedt (Wilrijk, Belgium)
Studies in Uniformity 205

K. G. Subramanian and Rani Siromoney (Madras, India)
On the Generative Capacity of Compound String and Array Grammars 231

Sargur N. Srihari (Amherst, NY)
Realiability Analysis of Majority Vote Systems 243

John F. Cyranski (Geneva, NY)
Derivation of Regression Formulae Using the Minimum Cross-Entropy Principle 257

Volume 27

Gur Dial (Santa Catarina, Brasil)
Nonadditive Entropies of Order 1 and Type β and of Order α and Type β; Cascaded Channels and the Equivocation Inequality 1

Bruce H. Krogh and H. Vincent Poor (Urbana, IL)
The Segment Method as an Alternative to Minimax in Hypothesis Testing 9

Takashi Soeda and Toshiaki Tabuchi (Tokushima, Japan)
Finite-Time Settling Adaptive Observer for Linear Discrete-Time Systems 39

VOLUME CONTENTS

YEA-FU TSAO AND KING-SUN FU (West Lafayette, IN)
A General Scheme for Constructing Skeleton Models 53

DIETER BLESSENOHL AND HARTMUT LAUE (Kiel, West Germany)
Two Remarks on a Note by Cannonito 89

ADILINA MARIA SILVA DE CUHNA, IBERE GUIMARAES, AND GUR DIAL (Santa Catarina, Brazil)
On Axiomatic Characterization of Weighted Entropy 91

TETSUO MORIYA (Tokyo, Japan)
Pebble Machines and Tree Walking Machines 99

KABEKODE V. S. BHAT (Iowa City, IA)
The Optimum Assignments and a New Heuristic Approach for the Traveling Salesman Problem 121

HIROSHI HASHIMOTO (Yamaguchi City, Japan)
Reduction of a Fuzzy Retrieval Model 133

PAAVO TURAKAINEN (Oulu, Finland)
A Homomorphic Characterization of Principal SemiAFLs without Using Intersection with Regular Sets 141

RALF HARTMUT GÜTING (Dortmund, West Germany) AND DERICK WOOD (Waterloo, Ontario, Canada)
The Parenthesis Tree 151

G. LOIZOU AND P. THANISCH (London, England)
Enumerating the Cycles of a Digraph: A New Preprocessing Strategy . . . 163

MASAHARU MIZUMOTO (Osaka, Japan)
Fuzzy Conditional Inference under Max-$\odot$ Composition 183

ERICH PETER KLEMENT (Klagenfurt, Austria)
Some Remarks on a Paper by R. R. Yager 211

ERICH PETER KLEMENT (Linz, Austria)
Operations on Fuzzy Sets—An Axiomatic Approach 221

HIROSHI HASHIMOTO (Yamaguchi City, Japan)
Reduction of a Nilpotent Fuzzy Matrix 233

Volume 28

M. R. MEYBODY AND S. LAKSHMIVARAHAN (Norman, OK)
ε-Optimality of a General Class of Learning Algorithms 1

KAORU HIROTA (Tokyo, Japan) AND WITOLD PEDRYCZ (Pstrowskiego, Poland)
Fuzzy System Identification via Probabilistic Sets 21

RONALD R. YAGER (New Rochelle, NY)
Generalized Probabilities of Fuzzy Events from Fuzzy Belief Structures 45

JON T. BUTLER (Evanston, IL)
On the Relationship between Propagating Context-Dependent Lindenmayer Systems and Cellular Automata Systems 63

RONALD R. YAGER (New Rochelle, NY)
A New Approach to the Summarization of Data 69

PRADIP K. SRIMANI (Calcutta, India)
Impossible Pair Constrained Test Path Generation in a Program 87

HIDEAKI SAKAI (Kyoto, Japan)
Optimal Transmission of a Gaussian Vector through a Gaussian-White-Noise Vector Channel with Feedback 105

W. SPLETTSTÖSSER (Aachen, West Germany)
On the Prediction of Band-Limited Signals from Past Samples 115

FRANCESCO E. LAURIA (Napoli, Italy)
An Addressable Machine as the Interpretation of a Free Group 131

ROBERT BADARD (Villeurbanne, France)
The Law of Large Numbers for Fuzzy Processes and the Estimation Problem 161

MITSURU ISHIZUKA, K. S. FU, AND JAMES T. P. YAO (West Lafayette, IN)
Inference Procedures under Uncertainty for the Problem-Reduction Method 179

NICHOLAS V. FINDLER, NEAL MAZUR, AND BEDE MCCALL (Tempe, AZ)
A Note on Computing the Asymptotic Form of a Limited Sequence of Decision Trees 207

RUDOLF KRUSE (Braunschweig, West Germany)
The Strong Law of Large Numbers for Fuzzy Random Variables 233

AUTHOR INDEX 243

TITLE INDEX 247

LIST OF CONTENTS iii